Spatial Analyst Exercise

In the Alder Creek Allotment near Denio how many acres are functionally graze able? For the purpose of the class we will be making some assumptions. First that the cattle will not graze on land over 25% slope. Second that the cattle will not graze on land more then a mile from water. Third we are assuming that there are no barriers in the allotment other then slope and distance from water. Fourth for the purpose of this exercise we will be using all the waters that are mapped by USGS on the 100,000 quad sheets. For the real functionality of a allotment you would need the active and accessible waters only.

1. Open a new view, Turn the "Spatial Analyst" extension on, Set your "Working Directory" to D:\arcview_class, Add three themes (denio100 as a Grid, allot as feature polygon, and water_denio as feature points)

2. Set the analysis properties. <Analysis> <Properties>. Set the extent to "Same as Denio100" and set the cell size to "Same as Denio100". No Mask. <OK>.

3. Derive slope. Make the theme "Denio100" active in the view then <Surface> <Derive Slope>.

4. Create a theme for slope percent using the directions on the slope handout.

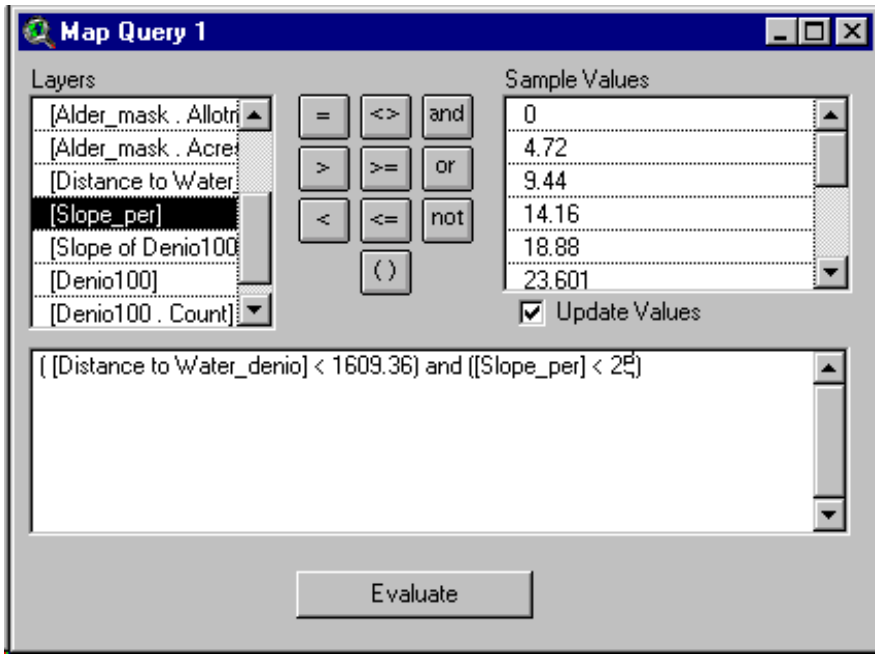
5. Create a distance theme from the "water_denio" theme. Make the "water_denio" theme active in the view then <Analysis> <Find Distance>.

6. Create a new Grid file to be used as a Mask of the Alder Creek Allotment. Make the "allot" theme active in the view. Use the query builder or select feature to select "Alder Creek Allotment". Export the selected part of "allot" to a new Grid by selecting <Theme> <Convert to Grid>. Give the new grid the name "alder_mask" when prompted. You will also be prompted for the field to base the Grid on, Select "name". <OK> and <OK>.

7. Set the Mask in the analysis properties. <Analysis> <Properties> Set the Mask to "alder_mask". <OK>

8. Create a new Grid showing the functional area of the allotment using map query. <Analysis> <Map Query>. The formula to enter should look something like ([Distance to Water_denio] < 1609.36) and ([Calculation 1] < 25)
   The number 1609.36 is the number of meters in a mile. You will need to type the numbers on the key board but all the rest of the functions you should be able to select with the mouse. Below is a example of the "Map Query" box. Click <Evaluate>.

   Note: [Calculation 1] is the slope percent theme you created in step 3.



9. Calculate the acres. Open the new themes table. Select <Table> <Start Editing>. Add a field "Acres" with a width of 16 and 2 decimal places. <Edit> <Add Field>. Use the calculator to calculate acres. The formula should be "Count * 900 / 4046.8564". The count is the number of cells. The call size is 30 meters by 30 meters. 4046.8564 is the number of square meters in a acre.